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FRAMEWORK FOR THE IMPLEMENTATION OF A SUPPLIER KANBAN
SYSTEM IN A SMALL AND MEDIUM SCALE INDUSTRY



BY
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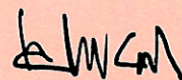
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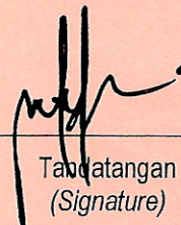
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ABSTRACT

The framework for the implementation of Supplier Kanban System was developed as a simple step-by-step guide for small and medium-sized companies (SMEs) with limited resources that wish to implement the system for an extended period of time. The model takes into consideration of the limited resources of manpower, time and money available to the SME companies and allows the companies to freely select only some (if not all) of the elements of the system, and apply it at their own comfortable pace. The framework was developed using an Action Research model which consists of two parts: (i) the core action research project, and (ii) the thesis action research project. The core action research project was undertaken to solve the supply chain and warehouse management problem in APMAE, the company where the research was carried out. The thesis action research project developed the Framework for the Supplier Kanban System by combining the knowledge, learning and experience gained from both the projects. The research was conducted over the four Action Research Cycle and Continuous Learning Cycles for a period of three years and the methods used to collect data were participant observations, participant interviews, focus group interviews, diary keeping and document research. The outcome from the core action research project was a twenty nine percent reduction in inventory and a thirty percent reduction in manpower resulting in a successfully implemented Supplier Kanban System in APMAE. The outcome from the thesis action research project is the framework for the implementation of a Supplier Kanban System.

Keywords: Supplier Kanban System, Action Research, Automotive Components

ABSTRAK

Rangka kerja pelaksanaan Sistem Pembekal Kanban telah dibangunkan sebagai panduan langkah mudah untuk kegunaan syarikat kecil dan sederhana (PKS) yang mempunyai sumber yang terhad dan ingin melaksanakan sistem ini untuk suatu jangka waktu yang lama. Model ini mengambil kira sumber daya tenaga kerja yang terhad, masa dan wang yang sedia ada untuk syarikat-syarikat PKS dan membolehkan syarikat bebas memilih mana-mana (jika tidak kesemua) unsur-unsur sistem, dan menerapkannya mengikut kesesuaian kadar masa mereka sendiri. Rangka kerja ini dibangunkan menggunakan model Kajian Tindakan yang terdiri daripada dua bahagian: (i) projek kajian tindakan teras dan (ii) projek kajian tindakan tesis. Projek kajian tindakan teras telah dijalankan untuk menyelesaikan masalah rantai bekalan dan pengurusan gudang di APMAE iaitu syarikat tempat penyelidikan ini dijalankan. Projek kajian tindakan tesis telah membangunkan Rangka Kerja bagi Sistem Pembekal Kanban dengan menggabungkan pengetahuan, pembelajaran dan pengalaman yang diperolehi dari kedua-dua projek tersebut. Kajian ini telah dijalankan dengan empat Kitaran Kajian Tindakan dan Kitaran Pembelajaran Berterusan untuk tempoh tiga tahun dan kaedah yang telah digunakan untuk mengumpul data adalah menerusi pemerhatian turut serta, temu bual peserta, temu bual kumpulan fokus, penyimpanan dairi dan analisis dokumen. Hasil daripada projek kajian tindakan teras telah menunjukkan pengurangan inventori sebanyak dua puluh sembilan peratus dan pengurangan tiga puluh peratus untuk tenaga kerja. Dapatan ini membuktikan kejayaan pelaksanaan Sistem Pembekal Kanban di APMAE. Hasil daripada projek kajian tindakan tesis adalah rangka kerja bagi pelaksanaan Sistem Pembekal Kanban.

Kata kunci: Sistem Pembekal Kanban, Kajian Tindakan, Komponen Automotif

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ABBREVIATIONS

SMI	-	Small and Medium Scale Industries
APMAE	-	APM Autoelectrics Sdn. Bhd
CBU	-	Completely Built Unit
FG	-	Finished Goods
CKD	-	Complete Knock Down Components
TAA	-	Technical Agreement Assistance
OEM	-	Original Equipment Manufacturer
JIT	-	Just in Time
PPCD	-	Production Planning and Control Department
QA	-	Quality Assurance
VMI	-	Vendor Managed Inventory
JMI	-	Jointly Managed Inventory
TPS	-	Toyota Production System
TMC	-	Toyota Motor Corporation
WIP	-	Work in Progress
AR	-	Action Research
NG	-	No Good

CHAPTER 1

INTRODUCTION

1.1 Introduction

This thesis will focus on developing a framework for the implementation of a Supplier Kanban System. A Kanban system is an information system that assists the company in producing the right product, in the right quantity and at the time it is actually required (Javadian Kootanaee, Babu, & Talari, 2013; Matzka, Di Mascolo, & Furmans, 2012; Monden, 1981). A Kanban is a tool which is used to achieve this objective. This framework will be developed for companies which fall within the category of small and medium scale industry (SMI) with limited resources wanting to implement a Supplier Kanban System. A Kanban System is also compatible with contemporary ideologies in manufacturing systems such as Industry 4.0 and is an ideal foundation for companies wanting to transition to Industry 4.0 (Buer, Strandhagen, & Chan, 2018). In addition to being Industry 4.0 friendly, Kanban system's focus on improving energy efficiency, waste reduction, emissions and inventory reduction, indirectly contributes to the green movement by improving environmental impact and sustainability (Q. Zhu, Johnson, & Sarkis, 2018). A Supplier Kanban System refers to a systematic way of managing the parts supplied to a company by their suppliers, with the objective of delivering the required quantity when it is needed for production (Matsui, 2007; Sugimori, Kusunoki, Cho, & Uchikawa, 1977; James P. Womack, Jones, & Roos, 1991). The potential benefit of successfully implementing the Supplier Kanban System is reduction in component level inventory, warehouse space, and manpower. A study conducted by Matsui (2007) showed most influential JIT practices for competitiveness is Just in Time

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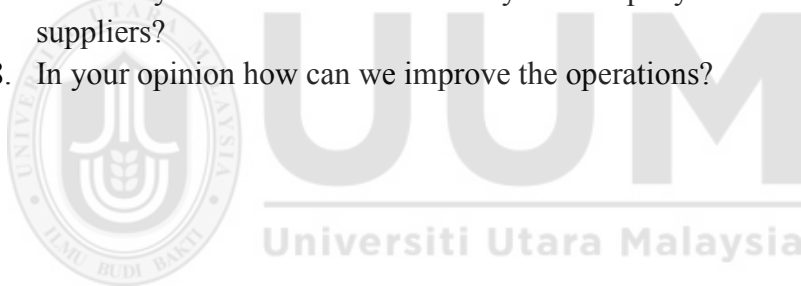


APPENDICES

1. Appendix A – Participant Interview Guide 1

1.1. Participant Interview Guide 1

1. How long have you been working here?
 - a. No. of years
 - b. Promotions
2. Briefly, explain your jobs and responsibility – Start from what you do from 8.00 a.m. to 5.00 p.m.
3. What is the most interesting thing about your job?
4. What do you find the most uninteresting thing you wish you don't have to do
5. Explain the problems you face with other departments , Production, PPCD , QA, Purchasing and Supplier
6. What is the problems face by the warehouse in terms of parts supplied by the local suppliers?
7. What do you think of the current way the company is handling our suppliers?
8. In your opinion how can we improve the operations?



2. Appendix B – Participant Interview Briefing Note

2.1. Participant Interview Briefing Note 1

Briefing Note is to inform the interview participant the purpose of the participant interview. The participant interview is conducted for the sole purpose of gathering information to make improvement to the current system and all information collected will be kept confidential between the interviewer and interviewee. The interviewer will not disclose the identity of the interviewee.

Following three notes serve as a reminder to the researcher to inform to the participants at the beginning of the interview

Note 1: Inform the interviewee you will be conduct similar interviews other personnel

Note 2: Get permission to record the interview and inform all information will be kept confidential

Note 3: Give commitment information will not be shared and recording is only to ensure no key information missed out or overlooked.

3. Appendix C – Participant Interview Transcript 1

3.1. Participant Interview Transcript – SH-1

Storehand 1 (SH-1)

(Turn on Hand phone recorder)

Researcher: We are at the warehouse working area where the participant is doing his work. The participant was about to lift the pallet full of goods with the pallet truck. The date is 6 June 2014, Wednesday. The time is 9.30 a.m.. I specifically chose this week for the interview because the Warehouse Manager was away on training for the whole week.

Researcher: Good morning.

SH – 1: Good morning boss.

Researcher: I need some information from you as I am doing a study to improve the operations of the warehouse. Will you help me?

SH-1 Yes boss. Of course I will. (The participants smile happily.) There are many things which can be improved. I told my boss a few times but he does not listen to me. (The participant shows expression of disappointment)

Researcher: Oh really? Before we continue I want to inform you I will be interviewing all the store hands. I want to understand from your perspective what problems you are facing in your day to day job. How can I help to make improvements?

SH-1: I am always ready to help the company, Sir.

Researcher: Will you mind if I record this conversation? All the thing you say will be kept confidential and no one will know the information came from you. (Participant pauses for while and looks worried)

SH-1: Boss, I think it is not a good idea to record conversation. If my boss knows I have been talking to you he will not be happy?

Researcher: I assure you, this recording is for my own use. I reiterate I will not share it with others. I want to record it so I will not miss out on any important points in our conversation.

SH-1: Sir, are you sure? What if someone find outs? (The participant still shows hesitation)

Researcher: Please trust me.

SH-1: (He pauses for a while) O.K. Boss. Please I trust you.

Researcher: How long have you been with APMAE?

SH-1: Ten years. I will receive my ten year service award this year. (Body Language - Expression of pride and sense of accomplishment)

Researcher: That's nice. I received my ten year service award last year.

SH-1: Been working in the warehouse from the day I joined this company. I have worked in all the sections. I know every job in the store. (Body languages shows he is proud to be well versed with his job)

Researcher: That's really good.

Researcher: Please answer my questions honestly and sincerely. As you know I have been appointed by the big boss to make improvements at the store. But before I make any improvements I want to hear from the working level people. What the problems you are facing in the warehouse.

SH-1: Really? This is the first time management want to hear our opinion. (He looked surprised in a happy way)

SH-1: Look boss. Everywhere no space. (He starts to point at the congested warehouse). I drive the pallet truck also have to be careful not to knock over things.

Researcher: Why do you think this is so?

SH-1: The warehouse is not big enough for all our stock. We need a new bigger warehouse? Look, (He points to the goods stored between the racks). Every time we want to take things from those racks we need to move the pallets blocking the way and then take the goods down. Then we have to push those goods back. This takes a long time and we are always busy. No time to rest at all.

SH-1: (Then he points to the temporary storage outside the store.) Look we have to put the goods outside the store because inside no more space.

Researcher: Besides getting a new or bigger warehouse what else can we do to improve the operations.

SH-1: Boss, we must have a bigger warehouse. (Body expression showed he was emphasizing this point)

Researcher: As you know it will take at least six months to one year to build a new warehouse. While waiting to build a new warehouse what else can we do? You have been here very long. I am sure you have some idea.

SH-1: Boss, look at the parts I am going to store away. You know how much of these parts we have. (He starts walking towards the storage area where these items are stored.)

SH-1: Look boss! (He shows to a huge stock of parts.) The supplier keeps on sending the parts even though we have so much stock.

- Researcher: Why are we continuing to receive these parts since it is not moving? (I look at the stock and took notice; we are carrying almost three weeks stock. Production is running on kanban and we do not need to keep so much stock)
- SH-1: I do not know boss. We just store the stuff we receive. I also inform my manager to ask supplier to stop delivering some of these parts. He scolded me and told me to do my job.
- Researcher: Are there other parts which we are overstocking?
- SH-1: Almost all suppliers keep sending parts and we keep storing them. Some parts are very small, so we do not have problem storing. Only the bulky parts cause a lot of problem. The smaller part we can stash them anywhere (The participants walk towards other parts which have excessive stock holdings.)
- SH-1: We also have problems finding the parts and taking the parts out and repacking before sending to production. Sometimes when urgently required parts come to the warehouse we have difficulty finding space to keep it.
- SH-1: Please do not tell my manager, but I have informed him many times to tell the supplier not to deliver the goods which are overstocked.
- Researcher: What other problems do you face?
- SH-1: I do not want to complain about this, because we earn good money from overtime. However, on many occasions we are forced to work overtime. Sometime every day must work overtime. We do not mind but it is tiring and we want to go back and spend time with family. When we reach home our children already asleep.

Researcher: That's a good point. Is there anything else ?

SH-1: That's all boss.

Researcher: Thank you very much for your input.



3.2. Participant Interview Transcript – SH-2

Store Hand 2 (SH-2)

(Turn on Hand phone recorder)

Researcher: We are at the warehouse working area where the participant is doing his work. The participant is repacking the goods received from the supplier. The goods are received from the supplier in bulk. The warehouse breaks the bulk to lot sizes of 120 as required by the production. The date is 6th June 2012, Wednesday. The time is 10.30 a.m... I specifically chose this week for the interview because the Warehouse Manager was away on training for the whole week.

Researcher: Good morning.

SH – 2: Good morning boss.

Researcher: I need some information from you as I am doing a study to improve the operations of the warehouse. Will you help me?

SH-2: He nods his head in agreement

Researcher: Before we continue I want to inform you I will be interviewing all the store hands. I want to understand from your perspective what problems you are facing in your day to day job. I am looking at ways to make improvements?

SH-2: O.K.

Researcher: Will you mind if I record this conversation? All the thing you say will be kept confidential and no one will know the information came from you.

SH-2: He shakes his head, implying no

Researcher: I promise you, this recording is for my own use. I will not share it with others. I want to record the conversation so I will not miss out on any important points in our conversation.

SH-2: (Nods his head implying O.K.) You are the boss.

Researcher: Trust me. I will not share this recording with anyone else.

Researcher: How long have you been with APMAE?

SH-2: Fifteen years.

Researcher: That's a long time.

SH-2: We have many staff who has been working here longer than me.

Researcher: That's good.

Researcher: Please answer my questions honestly and sincerely. As you know I have been appointed by the big boss to make improvements at the store. But before I make any improvements I want to hear from the working level people. I want to know the problems from the working level? Will you help me? .

SH-2: No problem. But here we do what we are told.

Researcher: You have been working here for fifteen years, I am sure you will have some ideas for improvement.

SH-2: Well, the warehouse is not big enough for us anymore. We need a new warehouse.(Points to things placed everywhere. Moves his body to emphasise congestion at the place he is standing.)

Researcher: What about the job you are doing now?

SH-2: It's O.K.

Researcher: Any idea how you can improve on it.

SH-2: Have to stand the whole day and do the repacking. Will be nice if we can sit down and do the repacking, then it won't be so tiring.

Researcher: Well, I cannot do anything about it. This is our company policy. We have to stand and do operations.

Researcher: Is there anything else you want to add to improve the operations, especially the current work you are doing?

SH-2: Well a lot of repacking needs to be done. (He points to all the items he has already done.)

Researcher: Anything suggestion to improve this process?

SH-2: We have to do this or production will not have parts. Sometimes when they change product suddenly, we have to scramble to do the repacking. Many chance of making mistakes. When mistake happens we get blamed and scolded by our boss and sometimes by production? If we can have sufficient lead-time to do the repacking that will be helpful..

Researcher: I thought we have already established a lead-time for you this operations. Does production make abrupt changes often?

SH -2: Yes we have standard, but nobody follows. Nowadays production change plan very often. Sometimes twice in one day.

Researcher: Really! Do you know why that happens?

SH-2: I heard supplier part quality problem. Not surprised as we are keeping so much stock of supplier parts. I also think it could be bad planning and they are covering up for each other

Researcher: What do you mean by bad planning?

SH-2: Nothing. I heard warehouse people complaining production planning not very good so many changes.

Sometime they blame the warehouse cause the part to be damaged. Sometime they blame warehouse very slow. When change model, and we do not get kit ready on time. They blame we deliver parts slow and production line stop. We only have this many people and this is what we can do. We only have two hands

Researcher: Is there anything else, any other idea you have which can help improve the operations?

SH-2 Shakes his head implying no. I think already say too much.

Researcher: Thank you for your cooperation.

SH-2: Thank you boss.



3.3. Participant Interview Transcript – SH-3

Storehand 3 (SH-3)

(Turn on Hand phone recorder)

Researcher: We are at the warehouse office where the participant is doing his work. The participant was sitting at the desk keying in data into the computer. The date is 6th June 2012, Wednesday. The time is 11.30 a.m... I specifically chose this week for the interview because the Warehouse Manager was away on training for the whole week.

Researcher: Good morning.

SH –3: Morning boss. (Smiling)

Researcher: I need some information from you as I am doing a study to improve the operations of the warehouse. Will you help me?

SH-3: Sure (She nods her head in agreement)

Researcher: Before we continue I want to inform you I will be interviewing all the store hands. I want to understand from your perspective what problems you are facing in your day to day job. Will you provide me some information from your perspective which will allow us to make changes for the better?

SH-3: Smile and nods, implying O.K...

Researcher: Will you mind if I record this conversation? All the thing you say will be kept confidential and no one will know the information came from you.

SH-3: Nothing to hide. Cannot sack me if I am doing my job.

Researcher: Thank you. I promise you, this recording is for my own use. I will not share it with others. I want to record the conversation so I will not miss out on any important points in our conversation.

SH-3: I understand and it's O.K.

Researcher: How long have you been with APMAE?

SH-3: I am one of the longest serving staff in APMAE. Around seventeen years. Still, working as senior store hand. Others have been promoted to supervisor and officer.

Researcher: That's a long time. I just spoke to SH-2, who has been here for fifteen years and I thought that was a long time. Now here, you are telling me you have been with us for seventeen years. Why do you think you have not been promoted?

SH-3: My boss does not like my directness. I heard he thinks I talk too much. I do my job and I guess my words offend my boss and other department managers. I know they complain about me.

Researcher: Than why do you stay on; why not look for other job.

. SH-3: Salary good with a lot of overtime. I not go to school. Drop out after Form 3, cannot get job elsewhere.

Researcher: Please answer my questions honestly and sincerely. As you know I have been appointed by the big boss to make improvements at the store. But before I make any improvements I want to hear from the working level people. What the problems you are facing in the warehouse.

SH-3: Boss, I will tell you all you need to know. When I tell my ideas or opinions no one wants to hear. I feel there can be many improvements.

Researcher: What do you think is the biggest problem with the warehouse?

SH-3: We need a bigger warehouse based on current condition, but if we can control the suppliers better we may not need so much space and we can also reduce the manpower.

Researcher: How is that possible?

SH-3: The suppliers seem to send in parts without following our schedules. They are powerful, because they can control our purchasing department. Sometimes they send more parts than required. Then the purchasing department will ask us to receive the parts. If we say no, they tell us the supplier has already brought the parts here so it will be loss if we do not receive the parts.

Researcher: Really.

SH-3: Yes boss. Many times we do not want to receive but our boss will ask us to receive the parts after talking to purchasing. I guess he does not want to offend purchasing. But end we have to take all the shit. Sorry for the language.

Researcher: Did you talk to your boss about this?

SH-3: Yes, many times. But he says he do not want any trouble. So he just follow purchasing request. Sometime I am very angry because there is no place to keep the stock but we still received.

SH-3: One time I told supplier to take the stuff back. He said he will discuss with purchasing and then purchasing advice to accept the stock.

Researcher: What else do you think we can improve?

SH-3: I also think we can ask suppliers to pack in standard packing and deliver to us. I have seen this practised in other companies. Even some of our sister companies practice this. Why we cannot practise this I do not understand. If we practise this we do not have to repack and the manpower can do other things.

Researcher: Why do you think we are not initiating these programs?

SH-3: I do not know, boss. I only know if we control the supplier many things can improve.

SH-3: Look our 5S is messy, parts are being misplaced and we spend long time looking for parts. People complain warehouse bad housekeeping and management no good. I also feel embarrassed when I hear this.

Researcher: mmmm

SH-3: I receive the monthly and daily delivery schedule from PPCD department. Every time this schedule is not followed. We update the schedule and forward it back to PPCD. PPCD has to then revise the schedule again. Sometimes schedule has to be revised daily and more.

Researcher: The schedule revision is it only because of the oversupply of parts. Or are there other reasons?

SH-3: Boss, many, many, reasons. You should talk to my boss. He knows all about it.

Researcher: I am talking to you. This is because I want to understand the problem from the person doing the job. Your boss is the manager and he manages. He does not do the job himself, so he may not know the nitty gritty details of the problems you face.

SH-3: I can tell you a lot more. Please do not tell my boss. If he know I told all these things. Then I die.

Researcher: Please, do not worry. This conversation is confidential between us.

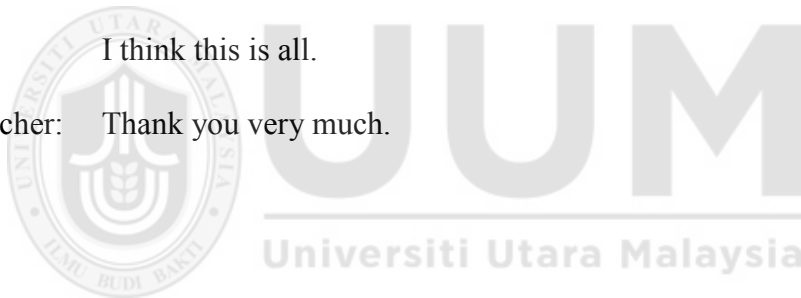
SH-3: Sometimes we keep the parts long, some of it gets rusty. Then when we want to use, QA reject the parts. Then we have to return these back. Then we find many part rejected. Management blame us for not keeping the parts properly causing it to rust.

SH-3: Then we have to open up all the boxes looking for good parts. A lot of time wasted and no value. Warehouse people always suffer.

Researcher: This is very good information. I definitely can use this information to make improvements. Is there anything else you will like to highlight?

SH-3: I think this is all.

Researcher: Thank you very much.



4. Appendix D – Focus Group Interview Guide 1

4.1. Focus Group Interview Guide 1

1. Explain your job and responsibility, how you go about getting your job done.

The process you go through and your interaction with the other members in this room?

- a. This is focus group interview with the object of identifying cross functional and cross department problems
 - b. Also inform them you will stop them if the conversation strays away from the topic under discussion.
 - c. Especially problems arising from the interaction
 - d. Pick a key member and ask him to explain his job
 - e. Start from what you do from 8.00 a.m. to 5.00 p.m.
2. Egg them to continue with what happens next, or then what do you do ?
 3. Ask the rest of the participants if they agree or disagree with the statements made. Ask to stop the participant if they have any disagreements with any of the statement
 4. Repeatedly ask participants if they agree with the comments being made?
 5. What is their perspective and explain if they can what they think is the reason for the “difference of opinion”
 6. Ask probing questions when there are disagreements?
 7. In your opinion how can we improve the operations?

5. Appendix E – Focus Group Interview Briefing Notes

5.1. Focus Group Interview Briefing Note

Focus Group Interview Briefing is to inform the focus group participant the purpose of the information gathering through focus group interviews and how the information will be used. The information is predominantly for the sole purpose of making improvements to the current system. The information collected will be kept confidential between the interviewer and interviewees and the interviewer will not disclose the identity of the interviewee.

Following three notes serve as a reminder to the researcher to inform to the participants at the beginning of the interview

Note 1: Inform the interviewees you will be conduct similar interviews other focus groups

Note 2: Get permission to record the interview and inform all information will be kept confidential

Note 3: Give commitment information will not be shared and recording is only to ensure no key information missed out or overlooked.

6. Appendix F – Focus Group Interview Transcripts 1

6.1. Focus Group Interview 1

Group 1 -

This focus interview is specifically to understand the process and problems involved in production floor relating to CKD supplied by warehouse to Production

Participants

Focus Group 1	Code
Researcher	R
Production Supervisor Alternator Line	PRS1
Production Supervisor Alternator Line	PRS2
Production Supervisor Rotor Line	PRS3
Production Supervisor Starter Line	PRS4
Production Supervisor Wiper Line	PRS5
Production Supervisor Washer Line	PRS6
Warehouse Kitting Supervisor	WHS2

Location: Researcher Office

Time 10.30 a.m.

R: Good morning. I asked all of you to come for this discussion to understand the problems faced by the production with regards to parts sent by warehouse to production. I know there are delays because wrong parts sent and delay in warehouse replacing parts and other problems. I want to understand the problem and find ways to improve the operations and reduce delays resulting specifically from parts sent by warehouse and received by production. Pause for a while

R: Maybe Warehouse start the meeting by explain how this process starts

WHS2: Boss, you already know the process? I have also explain to you earlier

R: Yes, I know. But we have all the related people here. I want them to know what is going on. Also if they do not agree we can get their perspective. Remember, objective is to improve not find faults

WHS2: Please explain how your department go about doing the job. Start from the morning, what are the things you do and how you go about doing it

WHS2: Every morning, we will check the Move Kanban Signal Post. Then my store hand will take the Move Kanban card from the Move Kanban Signal Post and check our kitting material which we have already prepared. We always prepare the kits much earlier.

R: The kitting material meaning the kits which have already been packed.

WHS2: Yes, Then we check the Move Kanban card against the Warehouse Kitting Kanban Card. We want to make sure the kit is correct.

(Pauses for a while looking at Researcher for acknowledgement)

R: Warehouse Kitting Kanban Card is the card which placed on the kits.

WHS2: Yes, this is the card which shows the parent part number and all the components which make up the kit.

R: O. K. Please tell us what happens next

WSH2: Then we remove the Warehouse Kitting Kanban card from the prepared kits and replace it with the Move Kanban card. Then Warehouse Store Hand moves this kit to the production floor. We place it on the empty rectangle on the floor. In the morning normally there will be two rectangles which are empty

R: Then what happens

WHS2: After placing the goods on the floor we get, production to acknowledge the correct items sent. Production Supervisor will sign the acknowledgement.

R: Any problem when acknowledging. Is the items checked properly by the person receiving the parts?

WHS2: Supervisor will sign. Normally they will not check properly

PRS1, PRS4; Early morning very rush, we just sign off first after general checking. There are many parts cannot check every parts. It is Warehouse job to ensure the parts are supplied correctly

WHS2: We try our best to ensure no mistake, but we are human some time mistakes do happen. That is why we want production to check also?

R: Isn't it the standard procedure for Production to check before acknowledging receipt?

PRS3: Yes is procedure. But in the morning normally no time to check in detail. Need to arrange manpower and organize work

PRS1, PRS2, PRS4, PRS5, and PRS: Rest of the production supervisor agree. Morning very rush so we just sign off

WHS2: Even in the afternoon also production does not check properly. Sign only.

PRS5, PRS6: Warehouse must supply good part. Not production become policeman to find warehouse mistake.

R: Guys, guys we are not here to argue and find faults. Let's try and understand each other's problems and find ways for improving. I prefer system based solution which does not depend on people.

R: After delivering of CKD components to production what does the store hand do?

WHS2: Look for empty CKD bin and take back to warehouse. In warehouse we need to do kitting to replace the CKD components sent to the production

R: Tell a little about the kitting process.

WHS2: My store hand will take the Warehouse Kanban Kitting card from the Warehouse Kitting Kanban Guide Post. They will take the Kitting card and go to the individual racks and collect the parts and put them on one pallet. When all the parts have been collected, they will make one final check and shrink wrap the kit. Then they will place the Warehouse Kanban Kitting card on the Kit. This completes the process.

WHS2; I forgot to mention, many times the pathway between the racks are blocked. So my guys have to remove the pallets blocking the passage way, collect the parts, then returns the items back.

R: How long does this take?

WHS2: Sometimes long sometimes not. Depends on how many pallets need to remove. Also if got place to put the pallets quite fast. Otherwise must find empty place to put pallets. This takes very long

R: Let discuss the process of what the production does with these kits?

PRS1: We remove the Move Kanban Card and place it in the Move Kanban Card collection bin. We take the CKD components and place them in the respective locations in the production line.

R: Do you do any checking before you put the CKD components in the bin?

PRS2.PRS4; Yes, we know the components, we verify quickly and place in the bins.

R: Do you face any problem in this operations?

PRS3, PRS4, PRS1: This operation normally no problem

R: You say normally no problem, meaning sometime there are problem. What problem?

PRS1: Sometime Warehouse do not send one component. Then we have to go to warehouse and request for this part.

R: What about other production lines. Do you face same problem?

PR2, PRS3, PRS4, PRS5, PRS6; Yes.

WHS2: Our people cannot concentrate on kitting alone. Sometimes having to move the racks before getting the parts very tension. Then sometimes we forget. If no need to move stock to collect the parts maybe no problem.

R: How often does this happen?

PRS1, PRS3, PRS5; Average once or twice a week

R: Yes, but there is a final check before you do shrink wrapping the kits. This is the quality gate.

WHS1: Sometime they overlook. Our staff have many work to do, kitting the parts, making sure all the components in the kit repacked correctly. Mostly, because they have to move stock to reach part than they overlook.

WHS1: I also told my boss the problem is because of too much stock in the warehouse. Very hard to reach and find parts. We also do not have enough manpower.

R: What you mean you do not have enough manpower

WHS1; Manpower enough if everyone comes to work. Almost every week one or two person do not come to work. Then the rest of us have to do more work.

WHS1: When too much work next day some store hand take MC.

R: Did you tell your boss of this problem.

WHS1: Already highlight many times. Boss say management want to reduce manpower.

R: This is not true. We feel if the operations managed efficiently, the manpower should be enough.

R: I am here to study this problem. If need to increase staff we will. But first we need to identify the problem.

R: The other problem we have involves exchange of defective parts from warehouse. Please elaborate on the process and problems. This time we start with production, PRS2. You seem very quiet.

PRS2: We do production. Sometime the components supplied got reject or short supply. We need to replacement.

R: O.K. Go on. How do you get replacement the parts? What documentation do you use to request the parts?

PRS2: QA raise a Part Quality defect sheet and QA will verify. Then we request part from Warehouse using this document.

R: If part shortage?

PPRS2: We raise part shortage, form and request for replacement.

WHS1: When receive the request we will immediately replace the part.

PRS3, PRS5: No lah, where got immediate replacement. Sometime have to wait half hour.

WHS1: Never half hour at most ten to fifteen minutes. My staff have to go and find the parts and get the replacement. In warehouse not easy to find parts. Sometime to reach the parts my staff climb the racks to save time. Not save and not proper procedure.

R: Do all the production supervisor agree this is a problem?.

PRS1, PRS2, PRS4, PRS5: Yes

PRS6: Sometime have to wait five to ten minutes. This will create line delays to production. We report this as production downtime

PRS5: Every lot also have same problem.

WHS1: Yes I agree. Every lot also have problem. This is reported monthly in our management meeting. Boss you also know this problem. Our staff sometime very busy with other things cannot immediately respond. Sometime two or three parts become urgent. We cannot handle two or three urgent part at the same time.

WHS1: All not warehouse problem. Already highlight, the QA should make sure supplier send good parts. But QA never check, warehouse get blamed.

R: We are not saying the problem is warehouse. We are aware of the suppliers' quality. I am trying to identify the problems and find some solution.

R: What other problems do production face, specifically related to CKD components delivered by Warehouse

PRS3: Parts shortage and some parts over supplied

R: Do all the rest of you have the same problem?

PRS1, PRS2, PRS4, PRS5: Yes,

PRS1: Most of the time got part shortage. Part oversupply no much of a problem because we can complete the production and return back the extra. However, short supply cause downtime

WHS1: We have to do repacking and sometimes our staff count wrongly. They have so many parts to prepare. Sometime we weigh the parts, weighing sometime not accurate. Sometimes so many parts to count and repack.

WHS1: I also told my boss we should ask supplier to send in standard pack. No need to repack.

R: We have more or less identified most of the problems from both all parties. These problems are real and we are all aware of it. Until now we have never worked towards solving them.

R: How do you think we can improve? Warehouse first?

WHS1: Get supplier to pack for us. Then we can spend our time doing other things. Our store hand will have time and not so much pressure and not so much mistakes.

PRS2: Get our supplier to send us defect free parts

PRS4: We notice parts from Japan always no reject and packing quantity always correct. Only problem with local supplier

R: Yes, it is true we have no problem from Japan parts.

PRS1, PRS2, PRS4, PRS5, and WHS1: All nod with agreement

R: It is almost time for lunch break. Any other problems.

PRS1, PRS2, PRS4, PRS5, WHS1: Nod their heads saying no

R: If this is the case we end our meeting here. Let's work together to improve the situation.

WHS1: We really hope to improve.

6.2. Focus Group Interview 2

Group 2 -

This focus interview is specifically to understand the process and problems involved in ordering of parts from supplier, issuing purchase orders, issuing schedules, receiving goods from suppliers, storing the goods, revising the schedules and communication with suppliers

Participants

Focus Group 2	Code
Researcher	R
Purchasing Manager	PM
Purchasing Executive	PE1
PPC Manager	PPCM
Incoming Supervisor	WHS1
PPC Executive	PPCE1

Location: Researcher Office

Time 2.30 p.m.

R: Good afternoon. Thank you for coming. I call for this meeting to understand the process of ordering and receiving parts from local suppliers. I also want to discuss the schedule revision processes and how we communicate with our suppliers. I know we have many suppliers with problems but in this meeting I want to focus only on the issues related to ordering, receiving and communication issues. I know a lot of the problem is related to quality issues, for quality I am calling a separate meeting involving most of you. If I include quality in this discussion, I think this

meeting will take forever. I will cut off issues related to quality, but will make note of it to raise during the discussion on quality.

As you all know the boss want us to reduce warehouse space utilization. I want all of you to speak freely, there is no right or wrong answers, we want to find the best way to solve these issues. I hope that being participative and involving the people actually doing the work, like yourselves, will provide some insights into the real problems faced.. We are finding solutions not faults.

So PM, we will start with you, explain the purchasing process. Please use the white board if you need to. As we discuss please interject if any of you feel the information given is misleading or wrong. I want this to be an interactive discussion.

PM: As you know after, the material ordering meeting in the middle of the month we place Purchase Order (P.O.) to our suppliers.

R: A single P.O. or multiple P.O..

PM: What do you mean?

R: Do you issue a single P.O. per supplier with many part numbers, or a single P.O. for a single part number?

PM: Ohh....A single P.O., for all parts from one supplier for the total monthly requirement.

R: Single P.O. for all model variants and all part numbers? So P.O. will have many part numbers?

PM: Yes, one supplier one P.O...for all parts for total monthly requirement.

PPCM: Our production planning is done for all models for the month. Then after our review meeting we will upload information into the MRP system. The system will consolidate the parts by suppliers. Then our Purchasing will issue P.O.

R: Why we cannot issue one P.O. for one part number?

PM: difficult. Then we have many part numbers to monitors and many P.O to issue and many P.O. numbers to monitor. We save paper and paper work.

R: What happens after the P.O. issued.

PM: We will e-mail the P.O. to our suppliers first. Then we will call the supplier to make sure they have received the P.O. Sometime they claim they did not receive P.O. Only discovered when we request delivery then they claim no P.O. You remember that happen a few time already.

PE1; Supplier blame us and management start checking our process and the usual hoo ha?

R: Then what happens.

PM: We also inform them to collect the original P.O. Their Sales people will come and collect the cheque and P.O...

PM: They need two weeks lead time to start making the parts

R: How does the request for delivery happen?

PPCE1: I make the original schedule and e-mail it to purchasing and purchasing send to supplier. Once we send the schedule to purchasing, then the purchasing department will follow up and make the revisions as necessary.

PM: Yes we review the schedule and issue to supplier, purchasing and warehouse. We use this schedule to monitor delivery. This is outside the MRP system and monitored manually.

R: Who update and makes revision on the delivery schedule and how frequently?

PE1: Only first schedule done by PPC then all revision done by Purchasing. Very 'leceh' job. Every time schedule must revise every time supplier deliver parts.

PE1: Mr. Pira..The supplier supposed to send the parts as per our schedule but most of the time never follow?

WHS1: Boss, every delivery also never follow? Sometimes I want to reject delivery also cannot. Purchasing insist must accept.

PE1: (PE1 becomes defensive). We always ask them to follow but we cannot control them. They already bring the parts here we cannot simply ask them to take it back.

PM: We have to consider supplier situation also. They give cheap price we must also understanding lah

WHS1: For purchasing no problem, warehouse suffer no place to put extra stock..

PE1: What you mean purchasing no problem? We have to revise schedule every time delivery not to plan. You want to try this job.

WHS1; But purchasing is cause of problem. Accept wrong delivery. Then reject delivery ...supplier will know we mean business.

PM: (PM intervenes supporting her down line staff). We cannot control the supplier. Sometimes they supply parts not requested? We just accept because it is still part of P.O. quantity but supplied in advance.

WHSI; Yes part of P.O. quantity but warehouse problem because we have to find storage place.

PM: Sometimes the parts are urgent, sometimes the parts have quality problem and production will pressure us to get the parts immediately. If got extra stock better.

R: Guys, Guys, let's get back to the topic of discussion. No need to argue. So what happens after we receive the stock from supplier?

WHS1: My store hand will unload the parts, check the part number and quantity. We will get QA to do sampling check. Once sampling check done and is O.K., we will upload information onto the MRP system.

WHS1: The system will increase the inventory quantity in the warehouse and reduce the outstanding quantity on the P.O. We will forward this information to Purchasing.

PE1: Once we receive this information we will update our record based on the delivery schedule. If they short supply we call the supplier and push them for the short quantity. This excel sheet is on a common folder in the server. Purchasing, PPCD and Warehouse can see the delivery schedule. Only purchasing department given authority to make amendments

PE1: Actually we have suggested warehouse update the schedule directly but our bosses do not agree. Why we need to receive numbers from warehouse and update schedule.

PM: No we have to update to ensure integrity of data. We are cross referencing against the MRP system before updating the schedule. Beside only one or two parts have discrepancies.

PM: To go on, once the schedule is updated we also submit revised schedule to our suppliers

R: What you mean only one or two part discrepancies.

PM; Supplier normally delivers many part numbers. Most of the part numbers follow schedule. Only or two of the part numbers oversupply or undersupply.

R: If that is the case we cannot be having so much of overstocking.

WHS1: This is problem over the years. We order too much and all kept in warehouse, and we keep on ordering.

PM: We follow PPC plan. Total quantity required for month is total quantity supplied. No oversupply from total quantity ordered against total quantity supplied.

R: I am not here to find faults, I want to know what happened, why it is happening and what action can be taken to improve. Let's continue

PM: Coming back to the process Purchasing revise the schedule, update the quantity received on schedule and revise schedule quantity for next delivery. Update schedule in common folder. PPC and Warehouse can immediately see. Then we e-mail to supplier. How do you know which is the latest schedule.

PM: We indicate revision number, revision date and reason for change. We also keep all the revisions in archive for traceability.

R: You address the short supply issue. What if over supply which seems to a problems as well?

PE1: The quantity supplied is more than request quantity. So we do not do anything. Supplier will normally call us ask us to accept.

WHS1: Many time we have asked suppliers to take back parts over supplied. But they will call Purchasing, then purchasing will force us to accept?

R: Why is this so?

PM: They already delivered and incurred transportation cost. If ask then to take back they have to deliver again and another cost. Anyway they still have to deliver this part again later.. No harm just take and keep.

WHS1. Warehouse no space that is why we want reject. But supplier call purchasing and purchasing always ask us to accept. Big boss come to warehouse and we always get scolded for putting things on the floor.

R: Has there ever been a time where we the supplier has been forced to take the parts back because his delivery is not as per delivery schedule?

WHS1, PE1, PPC1, PPCM; All answer together: Never

PM: If we keep asking them to take the parts back, next time they will increase the part price because of higher transportation cost? We also have to look at cost?

R: You said you follow up with supplier when short supply? What happens after you inform supplier?

PM: We immediately ask them to supply the needed part. Normally they will supply the needed part within two working days.

PPCM: We will change our production plan to run some other model. We carry three days customer stock so a few days delay does not affect delivery to customer but affects our production planning.

WHS1: Very easy for PPCD to change production plan. We in warehouse suffer. Have rush and start prepare kitting for different model. This is not the only supplier with this problem. Other supplier also behave this way.

R: Let's not digress on topic. Let's focus on this supplier first. I will call for another meeting to discuss other supplier and problems. Has anyone ever studied why the cause of for the oversupply or short supply

WHS1: Very easy. Because we accept whatever supplier deliver, they not afraid of APMAE. They know purchasing will accept.

PM: That is not true. We accept because we are cost conscious. Further, as I have already said earlier, this is still part of P.O. quantity.

R; How is the information generally communicated with the supplier.

PM : We e-mail the schedule to the supplier. Then we call them and follow-up with them on the delivery.

R: How about other department.

WHS: PPCM; Normally all communication with supplier handle by purchasing.

R: We know how it happens internally when there is short supply or oversupply.

What can we do to improve the situation?

WHS1: Do entertain the supplier. Whenever he send wrong quantity or oversupply, ask him to take back the extra. This will teach him not to play, play with APMAE.

PPCE: We have to be strict with the supplier? So how Proton or Perodua manage us. Short supply, our top management need to go and explain. Over supply they will not receive.

R: Any other suggestions? Pause. If none I end this meeting. I will call for another meeting to discuss other suppliers and problems.

Meeting ended: 4.00 p.m.



6.3. Focus Group Interview 3

Group 3 -

This focus interview is specifically to understand the inconveniences and problems brought on by the inconsistent and poor quality of parts from our suppliers and incongruent packing standards.

Participants

Focus Group 3	Code
Researcher	R
QA Manager	QAM
Supplier Quality Executive	QAE1
Incoming Inspector	QAI1
Warehouse Incoming Supervisor	WHS1
Production Supervisor Alt Line	PRS1
Production Supervisor Alt Line	PRS2
Production Supervisor Rotor Line	PRS3
Production Supervisor Starter Line	PRS4
Production Supervisor Wiper Line	PRS5
Production Supervisor Washer Line	PRS6

Location: Researcher Office

Time 3.30 p.m.

R: Good afternoon. . I asked all of you to come for this discussion to understand the problems faced by the production and warehouse on matters relating to quality. To be more specific quality of the parts supplied by our suppliers. I also want to discuss the problems caused by the differing packing standards between APMAE and our suppliers. Some of you have already gone through these focus group interviews with the other groups, so you understand the way we are going to do it. For those who are joining for the first time, the objective of this exercise is to jointly understand the problems related to quality and delivery. Subsequently we are going look for ways to

find a solution. There is no right and wrong answers. Just feel free to speak your mind.

R: We will start with warehouse first as this is where the problem is. Please WHS1, maybe you can start by describing your repacking exercise for the goods from the suppliers not following our packing standards.

WHS1: Well we will take the parts from the racks and bring them to our repacking station. We also have to bring the correct standard polybox. Then depending on the parts we either weigh them or recount them and place them on our standard packing box. Then we put our label on them.

R: What is the biggest problem you face with this process?

WHS1: Our staff spend the whole day doing this repacking exercise. If our supplier pack using our standard polybox, then we do not need to do this process.

WHS1: The packing standard between APMAE and supplier do not match, so every time there will be over or undersupply.

R: What do you mean? I do not understand.

WHS1: If our packing standard is 120pcs per bin and supplier standard is 50 pieces. Then if we request delivery 240 pieces, supplier will send 250 pieces. So oversupply by ten pieces.

WHS1: So every time there will be some mismatch?

R: This is an interesting observation. Have you informed anyone?

WHS1: I already inform WHM and also purchasing. My boss told me not to think too much. My job is to do and leave the thinking to management. Just follow instructions.

R: What other problems do you face with repacking? I was told the quantity is supplied is short or too much. ?

PRS1: Yes, every lot got part shortage or over supply. Every time we have to go back to warehouse for getting shortage parts.

WHS1: Is this the only problem with small parts which we have to way. The bigger parts no problem?

PRS3: Who say bigger part no problem? Always got quality problem.

R: Let's not include quality with quantity problem I want to understand quantity problem before we discuss quality problem. Does the bigger part have quantity problem?

PRS3: No. All bigger part put in polyboxes with nesting. Shortage can be seen. So far larger parts no shortage problem, only quality problem,

WHS1: Larger parts we arrange in bin. We cannot make mistake because we just put part in the bin. Cannot put more. If put less easily visible.

WSH1: Smaller part we use weighing machine to tare. Always got some discrepancy.

PR4: That is why we ask to keep some extra in the production. So if shortage we can use the extra stock to finish production lot and make report on shortage.

R: Good idea. Maybe we can consider how to implement this proposal.

PRS6: We have already proposed this a few time. Warehouse inform we cannot keep stock in production as no accountability.

R: If small parts use same concept of large parts with nesting this problem will be resolved.

WHS1: No boss, too much work. Now we weigh, then have to put one by one. Take longer time?

R: Supplier part quality seems to be one of the biggest complain we are receiving. Why are not detecting the problem before we receive the parts from the supplier. What about our incoming quality control.

QAM: We have incoming inspection procedure. However, we only do sampling check. So if part we sample is O.K. we accept the whole lot.

QAE1: We think the supplier purposely put some of the reject parts hoping we will not detect? Otherwise every lot got some problem which can be detected by supplier?

QAM: We have had many discussions with suppliers on this matter?

R: What are the results of these discussions? Any improvement.

QAM: Yes, immediately after our staff go and discuss and monitor their process, there will be no rejection for a while. Then the problem will slowly start back.

R: So the quality problem can be controlled with close monitoring.

QAM: Yes, but we cannot do this because we have too many suppliers. We cannot let our staff be at suppliers place. We other jobs besides monitoring supplier's quality.

QAI1: We have seen at supplier place the QA personnel do not follow procedure. The inspection process is good. When process skipped the quality problem happen.

R: What can we do to make sure supplier follow procedure.

QAM: Most of our current supplier not very good. Purchasing want cheap so we end up with low end suppliers.

R: If the supplier is no good, all the parts will have problem. Now only a small number having quality issues.

PRS1, PRS3: Boss yes the number is small, but every lot got problem and every time we spend so much time exchanging parts from warehouse. Then we have rush to finish work order our KPI cannot be met.

PRS2, PRS4, PRS5, PRS6: all nod their head in agreement.

R: We have identified two issues affecting us, supplier quality and packing standard. How can we improve?

WHS1: Firstly we must ask our supplier to pack in our standard packing. We have suggest this before, but boss say we pay for poly box so we cannot give to supplier. Difficult to control loss and damage.

WHS1: We also committed to monitor the polybox. It is much easier to monitor poly box than do repacking. If we can stop repacking activity, our store hand will have more time to organize warehouse. Exchange of part with production will be faster.

PRS3: This is actually a good idea.

PRS5: We have to reject the supplier's delivery if the parts are no good. Otherwise they will not learn and continue to do what they are doing.

R: Any other suggestions? Pause. If none I end this meeting. I will call for another meeting to after implementing some of the improvement proposals.

Meeting ended: 5.30 p.m.

7. Appendix G – Participant Interview Guide 2

7.1. Participant Interview Guide 2

1. We have been implementing the improvements after conducting the study and identifying the weakness.
2. How do you feel about the action taken?
3. Do you see or feel changes resulting from the action taken?
4. What are the areas that have shown the most improvement?
5. What areas have least changes or no changes and you feel something can be done?
6. In your opinion how can we improve the operations?
7. Is there any areas of concern you will like to raise for consideration
8. There were issues raised about your superiors during the last participant interview and focus group interviews? Will you like to say something on this?



8. Appendix H – Focus Group Interview Guide 2

8.1. Focus Group Interview Guide 2

1. This is the second focus group interview. We are meeting after six months since conducted the first focus group interview. The purpose of this interview is to solicit information on the improvements and your perception as a team on the improvements. We also want to discuss where the improvements have been ineffective and what changes you will to see and any other concerns.
2. What improvements have you noticed since we implemented the Supplier Kanban System Phase 1? Something very obvious, can be positive or negative, does not matter.
3. Has any aspects of your job improved since the implementation? Has it become easier or difficult, especially in the areas where the different departments are interacting?
4. Has working relationship with your superior or with other departments improved or worsened. Give examples or situations for our better understanding
5. Pick members from different department for comments and solicit comments from all participants?
6. Is there something you had expected or wished would improve but you do not see or feel there is any visible change?
7. Repeatedly ask participants if they agree with the comments being made?
8. What is their perspective and explain if they can what they think is the reason for the “difference of opinion”
9. What are your concerns moving forwards? Anything you worry about and can have a negative implication to this initiative?

9. Appendix I – Focus Group Interview Transcript 2

9.1. Focus Group Interview 1

Group 1 -

This focus group interview is specifically to review the improvement and perception of the participants on the warehouse operations after the implementation of the Phase 1 Supplier Kanban initiative.

Participants

Researcher : (R)

Focus Group 1	Code
Researcher	R
Production Supervisor Washer Line	PRS6
Warehouse Kitting Supervisor	WHS2

Location: Researcher Office

Time 3.30 p.m.

R: Good morning. I asked both of you to attend this focus group interview to discuss your perceptions on the improvement initiative and your opinions on this initiative. We started this program around May and our last focus group interview was in June. Since our last focus group interview we have already implemented the Kanban System for the supplier of large parts, namely the parts used by the Washer Line. We planned to implement this with the Phase 1 supplier by end November (2012), and now it's December (2012). So I am having this focus group interview to get feedback and opinion from the people on the floor and how effective this implementation is and how we can improve on it and do things better. Also if you notice this time there is only the two of you. This is because the Phase 1

implementation only affected the Washer Line and I wanted to in focus only this area.

Please feel free to express your opinion as this information will not leave this room.

R: I will be recording this interview on my mobile phone, because I will not be able to take the minutes fast enough and I want to transcribe these later so I do not miss anything important. Again I assure you, this is only for my reference and I will delete this files after the transcription.

WHS2 and PRS6: Boss, it O.K. We are alright with the recording.

WHS2: Please do not share with my boss. I think he is not very happy with the improvements in the warehouse. Especially the fact that there is a lot of free space compared to before. I overheard him complaining he could not do this improvement because he had no power as compared with Boss?

PRS6: Yes, I also heard him say, boss can do because he has power and warehouse manager cannot control everyone.

R: No worries, and thank you for your honest information. I will not share this information with others.

R: What do you think of the improvements? I want both your opinions. Let's start with the PRS6 and then WHS2. Since the Production is the one that starts this activity when they detect defects in the line.

PRS6: There is very much lesser rejects than before. However, there are still rejects. With our QA and supplier QA checking before delivery, we would expect zero reject.

R: This is my concern as well, there is still some rejects slipping through despite our stringent control.

PRS6: The supplier should do 100% inspection at the production line like our practice here.

WSH2: Yes I think the supplier should do inspection in production line.

R: Yes I agree, we will be studying this option in Phase 2 implementation. This is the kind of input I am trying get in this interview. Your opinion and as well as your suggestions.

R: How about the time taken to get replacement part, this was one of the concerns before the phase 1 implementations.

PRS6 : Now replacement is done quite fast.

WSH2: Yes now faster because we can get the parts faster as there are no blockages between the racks. Also lesser parts in the warehouse easy to find parts we are looking for.

WSH2: We have a new problem. Since the supplier send only exact quantity, we have to reserve one or two poly boxes for replacing defective parts. So eventually we will be short of parts for production.

R: Notes this point. We will arrange with supplier to provide one additional poly box as reserve for replacing defective parts from production.

WHS2: The warehouse got so much spaces. So easy to move around and find parts. Actually this is the first time in all the years I have worked here there is so little clutter. Feels nice and better to work.

R: Has the improvements helped your operations? Please describe as detail as possible.

PRS6: For production not so much. There is still rejection online. But improvement in getting replacement part from warehouse. Very much faster and lesser waiting

time. Even other production line, not involved in improvement activity the waiting time has reduced.

WHS2: Yes the waiting time reduction is due to easier access to parts created by removal of blockages between the racks. Very easy for our staff to go to the location of the part storage and take the parts. Secondly, no need to look for many parts. Rejection is less, so part exchange is less.

WHS2: First most significant improvement is the clearing of the blockages between the racks. This allow our store hand to access the parts faster and get the replacements faster.

WHS2: Also safer for our store hand. Last time if urgent they will climb on the racks to the location to get the replacement part, now it is easily accessible.

WHS2: The second significant factor is the supplier is sending in the correct poly boxes. There is no need to repack. Our kitting operation is very much faster. This is very good improvement as the store hand not so stressed and can work better.

R: We had issue with production not wanting to provide the supplier's with the poly boxes. What was this about? This is not for fault finding but for me to understand.

PRS6: Yes boss, we reluctant to give our poly boxes to supplier. We did not trust them because of past experience. However, now we realize it was a good idea.

PRS6: Previously, we did give our boxes to the supplier. The supplier will take our boxes and put other things in them. Very often some boxes are damaged and some boxes lost. Warehouse know about this very well. Our big boss did not allow us to do this anymore as the poly boxes are expensive.

PRS6: However, it is important to monitor the poly boxes to ensure the suppliers do not damage or lose the boxes.

WHS2: Yes, we are monitoring the ploy box condition and quantity managed by the supplier. We have had issues of poly boxes damaged and missing with our suppliers, when we tried this many years ago.

R: What are problems you faced during the implementation on phase 1? I want to identify the problems in Phase 1 so we can overcome these during the Phase 2 implementation.

PRS6: There is still some quality problem and we will like to reduce to zero.

R: We already addressed this issue earlier.

PRS6: From the production side no issue. We still follow same procedure.

WHS2: We were sceptical initially but now we believe this will work. Our work load has reduced with the supplier doing all the packing in accordance with our packing standard.

WHS2: The fact we started this exercise during the Hari Raya Puasa period was very good. Gave us extra time to clear the excess stock without additional customer pressure.

R: Is there any other things you want to highlight before I end this interview?

WHS2: Boss, we did not believe this can be done. We have had many programs in the past which start very grandly and slowly die off. Most of us were sure this will be another project which will not be complete.

PRS6: We think your persistence and support was the primary reason for the success thus far.

R: It is a team effort and could not have been done without all your support.

WHS2: But boss, you control the supplier to follow instruction and reject incorrect delivery. In the past we let supplier control us, now we control the supplier.

WSH2: Boss, also this is in confidence, I heard the warehouse manager and purchasing manager not happy. Especially my boss, he worried the big boss going to think bad of him for asking new warehouse.

PRS6: Yes, I heard this too.

R: Firstly, thank you being honest and for the confidential information. I will address it without implicating either of you.

WHS2: We are happy with the improvement and we will support you.

PRS6: We are only concerned with sustainability in the future. Once boss, stop overseeing this project we are afraid it will go back to before way.

WHS2: Yes, many of us concerned about this matter.

Meeting ended at 5.00 p.m.



9.2. Focus Group Interview 2

Focus Group Interview

Group 2 -

This focus group interview is specifically to review the improvement and perception of the interview participants on the process and problems involved in ordering of parts from supplier, issuing purchase orders, issuing schedules, receiving goods from suppliers, storing the goods, revising the schedules and communication with suppliers after the implementation of the Phase 1 Supplier Kanban initiative.

This focus interview is specifically to understand

Participants

Focus Group 2	Code
Researcher	R
Purchasing Manager	PM
Purchasing Executive	PE1
PPC Manager	PPCM
Incoming Supervisor	WHS1
PPC Executive	PPCE1

Location: Researcher Office

Time 3.30 p.m.

R: Good afternoon. Thank you for coming. This focus group interview was undertaken specifically to review the improvement and perception of the interview participants on the process improvements from a purchasing and supply chain management perspective. The objective of this focus group interview is to ascertain the impact felt by you all either directly or indirectly as result of all the improvement

activities we have put in place over the last six months. Please feel free to highlight any good or bad points which has had any impact on your work and your wellbeing. I want to ascertain as much information from you all, the people who are actually running the operations. Please restrict this discussion to the Washer Line parts where we have already initiated the improvements. As before, I will record this interview and later delete it after it has been transcribed.

R: I will be recording this interview on my mobile phone, because I will not be able to take the minutes fast enough and I want to transcribe these later so I do not miss anything important. Again I assure you, this is only for my reference and I will delete this files after the transcription

R: I want to know if there are any real significant improvements, has these changes been for the better or has it made something worse. Please feel free to highlight any further improvements you will like to see, any changes you think is not good or could be improved.

PM: The suppliers are now following our instructions. I did not believe they will, but seems that they have taken our activities seriously. They have also stopped calling me and asking for leeway for special acceptance.

WHS1: That's because they know boss will call and force them to follow procedure. If boss not interfere they will still continue to be gangster. They can control you.

PM: Nobody controls us. We just want to make it easy for supplier and AE.

WHS1: No not AE. Make easy for you.

R: Stop. No more fighting within this group. Objective is to identify improvement and move forwards. If we are going to attack each other no point in having this discussion.

PM, WHS1: Sorry boss.

PPCM: Our production planning is also much easier. We issue one schedule and everyone follow the schedule. No need to make many revisions.

PPCE1: Yes we only issue the Delivery schedule once. Also already stopped the practice of revising the schedules. Reduces work load pressure to continuously change and update delivery schedules

PPCM: Yes, I agree, reduction and revision of schedules has reduced our work load and pressure.

WHS1: All parts are received in standard packing as per delivery schedule. No need to re-pack before storing in the warehouse. Also quantity is not many. Sufficient space in the racks to store the parts.

PE1: Quality of the parts have also improved. Not much rejection and replacement requirement need to be sent to supplier.

PE1: Managing the supplier haws become easier. We provide them with the standard and they follow. If they don't follow we reject. Setting rules and enforcing the rules is important.

WHS1: Also can make decision immediately if supplier do not conform to delivery quantity or packing standard. Just reject. Previously need to refer to my boss, refer to purchasing and finally accept. Now reject and we are done.

PPCE1: Also production planning is much easier. Since supplier deliver in standard quantity and parts are good quality. Production planning no need to check very often if the CKD is O.K. before confirming production plan. If parts NG or not yet repacked have to re-schedule production with different model.

R: Let's move on. What aspects of your job has improved as a result of this implementation.

PPCE1: No need to revise schedule regularly, check with supplier for revised part delivery, chase supplier for replacing rejected parts.

PPCE1: No more pressure from PPCD to chase for urgent parts.

PPCM: Lesser time spend planning and re-planning. Lesser pressure from production for scheduling parts when line down due to quality or delivery problem.

PPCM: For me personally the reduction in clutter in the warehouse and improve space available to store parts is the most significant improvement. From where we were to where we are now is extremely impressive.

PM: I agree with PPCM. I never thought this could be done. I was very sceptical at first as we had many programs which had failed. I honestly believe your contribution had a lot to do with this success.

WHS1, PPCE1, PE1: Yes., True. (Agreed on this statement. Nodding their head)

R: I want to discuss if working relationships with members within the department and members from other departments have improved.

PPCM: My relationship with the WM and PM has improved since we started implementing this initiative. Less pressure from production as well.

PM: Yes, I agree. As the supplier are following our schedule, no need to pressure WM or PPCM or QM.

PM: The suppliers have also come down to respect our rules and do not call me to request for exceptions or schedule revision. I think they all scared of boss.

PPCM: I noticed even the WM do not seem as tense as before.

PPCE1: I think once we implement the full program our jos will become much better.

PCM: I as the most senior person in this room will sincerely like to credit the improvement to boss. WE say this to ampu you, but we notice you are the only who continuously call supplier, walk the production line and directly take action.

PM, PE1, WHS1, PPCE1; All agree (Collectively nodded head)

R: Moving forward, what will you like to see improve further. A wish list of sorts. Also what you feel could have been done differently. What are your concern?

PM: We need to implement this to all suppliers as soon a possible.

PM, PE1, WHS1, PPCE1: All agreed.

PPCM: We are also concerned with continuity of this activity. As you know many projects in APMAE has started off well and slowly die off after the project leader resign or move to other section. We are afraid this will have the same fate. Without boss leading this project it will eventually die. We do not see anyone else within our company who can shoulder this responsibility.

PM: I know controlling the supplier is not easy. But with clear rules and enforcement with frequent checking it is made easy. For me having clear rules, communicated between all parties and ensuring all follow these rules was significant success factor.

WHS1: I strongly I agree one of the reason for the success thus far is the rules and enforcement of the rules.

PE1; Yes we agree. This made a significant difference.

PPCE1: Previously we had rules but it was not enforced. Now it is enforced we can see the benefits. I feel if boss did not enforced the rules and tell off suppliers the project would have failed.

PM, PE1, WHS1, PPCE1: All agreed

PPCM: We will like to organize more regularly meeting between suppliers and APMAE to share information and further improve our working relationship. Previously we were not allowed to interact in this manner.



9.3. Focus Group Interview 3

Focus Group Interview

Group 3 -

This focus group interview was undertaken specifically to review the improvement and perception of the interview participants on the process improvements from a quality perspective. The objective of this focus group interview is to ascertain the impact felt by the people directly affected by the parts quality and the effectiveness of the improvements made on the quality of parts received from supplier before and after the intervention. Was there any real improvement.

Participants

Focus Group 3	Code
Researcher	R
QA Manager	QAM
Supplier Quality Executive	QAE1
Kitting Supervisor	WHS2
Production Supervisor Washer Line	WHS1

Location: Researcher Office

Time 3.30 p.m.

R: Good afternoon. Thank you for coming. I call for this meeting to get a feedback on the effectiveness of the implementations of the first phase of the Supplier Kanban System. Its been more than six months since we started the phase 1 implementation and many activities were carried out. I want to discuss with you all who are the actual people affected by the improvements on how the impact these improvements have had on your work. I want to know if there are any real significant

improvements, has these changes been for the better or has it made something worse. Please feel free to highlight any further improvements you will like to see, any changes you think is not good or could be improved.

R: I will be recording this interview on my mobile phone, because I will not be able to take the minutes fast enough and I want to transcribe these later so I do not miss anything important. Again I assure you, this is only for my reference and I will delete this files after the transcription

QAM: I will like to start by saying, the quality of the parts received from the suppliers have improved tremendously since we started this program.

QAE1, WHS1, WHS2, PRS6: Yes . (All nod and agree)

QAM: ..Continue. Controlling the quality at the supplier's premises, and rejecting the NG parts at the suppliers place has ensured only good parts are received at AE. This is something we could not have done in the past as the suppliers will not allow us. The biggest take away for me is the ability to force the suppliers to do in-process inspection and weed out rejections at their premises. In the past the NG parts comes to AE and the QA department has to do the inspection and checking.

WHS1: Yes, we were working like shit to continuously check and filter our NG parts. So many and did not have enough resources to check everything. Then production will scold us for not doing proper checking.

PRS6: The number of NG parts found in production has also reduced significantly. We no need to go so often to change NG parts and production down time also reduced.

QAM1: We wanted to implement this many years ago but we had difficulty getting the suppliers to support us. Boss, your intervention and controlling of the suppliers

made this possible. Previously the supplier control us. No one willing to stand up against the supplier.

R: What improvements is most noticeable from the intervention? It can be something positive, something negative or no change?

WHS2: The supplier send us the parts in standard packing and follow packing standard. No need to rearrange and repack. Save a lot of time and headache. Only the washertank suppliers doing this. What about other suppliers. Our biggest problem is from the plastic parts and other small part suppliers

R: Guys, be patient. This is only the first phase. We will in due time implement the same system for all the suppliers.

WHS1, QAE1: We are waiting and looking forward to this

R: Let's focus on the improvement resulting from Washer Tank suppliers and not deviate away from the topic.

WHS1: After the intervention we find the warehouse is also less cluttered, cleaner and neater. Taking parts to do inspection also not so difficult as before. No need to ask warehouse to search the parts for us. We can easily find by our self.

WHS1, The cleaner environment make our feeling to work better. Nice to work in clean environment.

QAM, QAE1, WHS1, WHS2, PRS : all nod and shake head in agreement.

R: These are the good points. Any no good point.

PRS 6: we are still receiving NG parts in the production line. Although has reduced there are still parts coming to the line? Hope we can reduce this further.

QAM: You should be happy that it has reduced compared to before. (Asserting dissatisfaction)

PRS 6: Just saying as boss ask?

R: Guys, we want to know problems so we can improve. No negative comments to remarks made please.

R: Anyone has any other negative or positive things to highlight?

QAM: We find the attitude of the Warehouse Manager has improved. The Purchasing Manager has also become more supportive. We are not sure if they are serious or just cating to make boss happy.

QAE1: We also find the work environment less hostile. The suppliers are also responding positively as they got no choice as boss is pressing them to follow rules. Wish we can do the same to the other suppliers immediately.

R: What about the amount of work, Is it easier or less difficult now?

WHS2: Yes with regards to this parts our difficulty lessened tremendously. No need to count and repack. Never follow quantity or quality no good just return back to supplier.

WHS1: QA inspection also much easier. We are working closely with supplier production and quality. We are able to detect the problem and hold it at suppliers place. So only good parts are coming to AE.

PRS6: Yes we spend lesser time exchanging NG parts and the waiting time for the replacement parts is very much faster as compared to before.

WHS2: The parts in warehouse is easily accessible and stored properly. So we can quickly locate the parts. So we can do the part exchange faster.

R: What about your jobs, has it become easier. During the last interview there were many issues raised on the difficulty in carrying out your jobs.

QAE1: I find the most improved aspect of my job is the ability to reject the NG part to supplier, Now we do not need to worry about having to receive NG parts and do sorting. The supplier has to do this.

QAM: The quality of the parts supplied by the supplier has improved. I know it is mainly due to the time we have spent at the suppliers place helping them check and reject NG parts. However, from the plant perspective there is good improvement in vendor quality and delivery.

PRS6: My job has improves because I do not need to make so many request for part replacement and spend so much time at warehouse waiting for replacement parts.

WHS2: Much easier to receive and store the parts. No need to count and repack. A lot of time savings.

R: Let's move on. Has the working relationships with supervisors, and other departments improved. Give some examples.

QAM: Personally for me it has improved. The Purchasing manager is not as cocky as before. This is greatly attributed to your intervention. They are afraid of boss and boss control of suppliers. So they now do not blindly take the side of the supplier.

QAE1: We also find the working relationship with the supplier has improved. They are willing to accept the rejects are their fault and do the necessary corrective action.

WHS2: Our boss is also become nicer. I think because he afraid you scold him.

R: We should think like that. We should not fear people or do things based on fear. I hope all of you will take this message. Do something because it is the right thing to do, not out of fear.

QAM, QAE1, WHS1, WHS2, PRS: Yes boss: (All nod in agreement)

QAM: The purchasing manager has also become more supportive of AE and willing to take action against supplier. This has made our QA job easier. But we think it is because of pressure from boss.

R: What else will you all like to see improve?

QAM: Based on this phase and the benefit it has provided, we are looking forward to implement to the rest of the suppliers.

WHS2: Yes, if we can get the suppliers of the small parts to pack in our standard packing, we will save manpower and time? Really looking forward to implementing this phase.

WHS2: The warehouse will even neater and cleaner. It will be so much easier to store the parts and retrieve the parts.

QAE1: Improving the quality of the detection process at the supplier place is a very good move. We will like to spend more time educating the suppliers and teaching them to do in-process inspection. So they can detect problem as it happens and make corrections.

R: Yes, this is exactly what I am moving towards, we will be doing all this in due time.

QAE1: We also think boss being impartial and supporting anyone or giving special treatment to anyone has improved the working relationships between department. Previously there was no control.

R: What are your concerns moving forward? If possible I want address the issues at an early stage. This is important moving forwards.

QAM: Our main concern is sustainability. Now boss is spending much time and effort driving this project. Once boss assigned to other jobs we are afraid no one will continue to drive this and it will die a natural death, It has happened many times before?

WHS2: this is the view of many people in the warehouse and production.

QAE1: Boss is powerful and can control supplier. Purchasing also take instruction from boss. We are afraid boss not control and follow up this project not sustainable.

QAM, QAE1, WHS1, WHS2, PRS: All collectively agree.

QAM: We also think this project is progressing because you are personally and actively involved. You call the vendors boss and you come to production line and see for yourself. Previously no one follow up closely. We think this is one of the reason things are moving.

WHS2: Also boss control our manager. Now he is not so difficult with us compared to last time. Sometime he still scold us but is much better than before. If angry he ask us to complain to you.

WHS1: Purchasing also now accept our instruction and follow procedure. They afraid of boss so do not take short cut. Supplier also afraid of boss. So easy for us to work.

QAM: Our main concern is on how to continue to sustain this improvement.

R: Anything else to highlight.

R: If no we end here. It is already getting late.

Meeting ended at 5.00 p.m.